Designing a regional system of additional (pre-university) education in the context of staffing socio-cultural modernization

E. Sergushina[1*] and *M.* Lomshin[1]

[1]National Research Ogarev Mordovia State University, 68 Bolshevitskaya str., 430005 Saransk, Republic of Mordovia, Russia

Abstract. The idea of additional education is one of the most pressing problems of our time. However, despite the changes in regulatory documents, where the concept of continuing education is given a "place of honor", there is no consensus among scientists on what should be considered an additional education today. Keywords: Additional education, continuing education, students, regional system design, staffing of socio-cultural modernization.

1 Introduction

The modern model of education, focused on solving the problems of innovative economic development, imposes new requirements on the level of professional competence of teachers and heads of educational organizations.

An effective solution to the problems of Russian education is impossible without further professionalization of those who organize and conduct the educational process. Changing the role, tasks and functions of all participants in this process (from the heads of educational bodies and educational institutions to methodologists and teachers) implies fundamental changes in their professional development and retraining, but more importantly, it is a change in the way of thinking of participants in the educational process, the rejection of outdated stereotypes of the organization of the educational process and the transition to an innovative educational process with the planned result.

All participants in the educational process should get used to the new priorities, functions and guidelines that should be aimed at ensuring the quality, accessibility and effectiveness of education.

2 Main part

To implement these tasks, it is necessary to develop a methodology for designing a system of additional vocational education, create new institutional forms of professional development of teaching staff, develop and test innovative models of professional development and retraining in the context of staffing socio-cultural modernization of

* Corresponding author: sergushinaes@yandex.ru

Russian education. The existence of existing models of advanced training and professional retraining and the requirements for teaching staff imposed by the modern education system create contradictions between:

– the high rate of changes in the educational needs of teachers and the established frequency of professional development;

– changes in the content of general and vocational education, for example, the introduction of new generation standards, and the traditional content of methodological work;

– the content of the main directions in the modernization of the development of education in the regions and the existing professional development programs;

– the existing system of certification of teaching staff and the need for regular objective assessment of the level of formation of professional competencies among managers, methodologists and teachers of educational institutions;

– mainly by the state nature of financing and the need to create a market for educational services;

– the demand for the construction of innovative models of advanced training to work with managers, methodologists and teachers of educational institutions to implement a differentiated approach in their professional training and the lack of a developed substantive framework that determines the specifics of the system of advanced training, the lack of scientific justification for this process.

Innovative models of advanced training and professional retraining for the field of education should play the role of tools for eliminating these contradictions, as well as restructuring the outdated professional mentality of teachers and adapting them to modern conditions, stimulating motivation for further professional self-development.

At the regional level, as part of the modernization of the advanced training system, variable models of advanced training and professional retraining of specialists should be developed, taking into account the peculiarities and specifics of the region: socio-economic aspects of development, the availability of necessary human resources on the territory, analysis of the needs of the education and production system, the availability of innovative sites (business incubators) and the conditions necessary for their formations etc .

Currently, in the Russian system of additional vocational education, it is planned to form flexible structures for the provision of educational services, taking into account innovative approaches in education.

In recent years, there has been a tendency to institutionalize the activities of advanced training and retraining centers within accredited structures, since both organizations and employees themselves are increasingly determined to fix the additional professional competencies and qualifications they receive (in the form of various certificates taken into account when hiring, career growth).

The analysis of existing models of advanced training and professional retraining of teachers was carried out on the basis of traditional requirements and expert opinions of leading Russian researchers on this problem (E. M. Nikitin, E. K. Skorlukhanova, Yu. I. Turchaninova, I. N. Zakatova, S. G. Vershlovsky, T. A. Kaklukovich, etc.), who state:

a) there is still a monopoly of the state on the management, financing and content content of activities (mostly aimed at broadcasting advanced pedagogical experience) of professional development institutions, including the exercise of control functions over them;

b) there are growing disproportions between the needs of the innovative economy in qualified specialists for educational institutions and the underdevelopment of professional development mechanisms in institutions of this level;

c) modern mechanisms of quality assessment, certification and standardization of professional development of both teachers and adults with the participation of the professional community and public organizations are not being developed;

d) personalized (personality-oriented) programs, forms and technologies of professional development, including adequate financing mechanisms, are not stimulated. The consumer is completely at the mercy of the teacher of the Institute of advanced Training, who monopolistically determines the entire learning process. The definition of learning outcomes is also largely formal in nature.

We will analyze the current models of advanced training and professional retraining for the field of education.

Network model of professional development. This model is made up of schools and institutions of additional education. It is focused on increasing the level of professional competence of teachers, developing the competitiveness of the teaching staff based on the implementation of innovative approaches and valuable domestic and foreign pedagogical experience. The implementation of the network model allows you to identify "growth points", create project groups and teams.

The school – laboratory of Innovative development is a multifunctional institution that provides a set of necessary types of services to teachers: educational, informational, methodological, advisory, etc.11 [3-4].

The process of professional development of teachers and managers on the basis of laboratory schools has its own characteristics. As a rule, the work begins with a demonstration of the specifics of the innovative activity of the institution, the achievements of the team (including both positive and negative experience of teachers in solving problems related to the processes of education and upbringing). In the process of familiarization with pedagogical experience, problems are identified based on the identification of contradictions between one's own experience and "ideal practice". The identification of issues occurs in the individual and group work of participants with teachers. It is assumed that each participant of the program is able to realize the problems and build an algorithm for their resolution.

The second step, aimed at designing the content, as well as organizing classroom and extracurricular activities and coordinating the work on the implementation of the project, is the joint activity of all participants. At this stage, it is possible to use role-playing and business games.

The development of an independent project is the basis for the passage of the third stage. This becomes possible when the necessary skills of joint activity under the guidance of a teacher are obtained. The most effective form of professional development of teachers and administrative staff is a practice-oriented seminar.

This form of professional development is characterized by intensity and is designed for a period of 2 to 5 days (on vacation or in the afternoon). Lecturers, scientific consultants, experts from among teachers of schools and teachers of institutes of advanced training and universities are involved in its implementation.

When taking advanced training courses in the seminar mode, you need to adhere to the following logic.

Diagnostics of trainees, which is carried out in advance of the seminar, mainly remotely or directly upon arrival at the seminar. The purpose of diagnostics is to identify a range of current problems. Plenary sessions and group work alternate during the seminar. The plenary session includes reports on innovative approaches and outlines a range of relevant and significant problems. At the end of the plenary session, a problem is formulated, which is submitted for group discussion. Group work can be implemented in various forms - discussion, dispute, design. The analysis of the work of the groups is carried out daily at the

end of the day, during which the measure of participation of each listener in solving the problem is revealed.

Educational holding. Educational holding is a fundamentally new form of cooperation of educational institutions of different types, aimed at integrating efforts and means (financial and intellectual), educational resources.

In Russia, there is a well–known project to create an educational holding "Region" in the Tambov region, the purpose of which was to build a mobile pedagogical consortium of educational organizations in the region – from rural schools to universities - for the introduction of specialized education. Educational holding is a qualitatively new form of organization of cooperation of educational organizations of various types, aimed at integrating efforts and funds. It allows you to create interesting scientific and educational centers, organize the broadcast of the experience of the leading educational organizations of the region, combining its best achievements. As part of the experiment, the mechanisms of interaction between the Department of Education and Science of the Tambov region, the central resource school, zonal resource schools, universities were worked out. Such an educational holding can appear on the territory of the Republic of Mordovia, and the system of additional continuing education can harmoniously become the basis of its formation.

On the basis of central and zonal schools, teachers can have the opportunity to undergo interesting internships, scientific, methodological, organizational and pedagogical support for the formation of individual educational trajectories of students for professional, personal and career growth in the context of creating a system of continuing professional education is being developed for them.

Thus, a system of interrelated pedagogical measures is being created and implemented, based on the achievements of science and the best experience and aimed at improving the skills of each teacher, developing the creative potential of the entire teaching staff of the organization. Ultimately, there is an increase in the quality and effectiveness of the entire educational process, an increase in the level of education of teachers, education and development of schoolchildren [1].

Innovative experience of teachers. The main priority of the development of the teacher training system is adequate actions to generalize and actively use the innovative experience of the best teachers in pedagogical practice.

The involvement of innovative schools and the practice of the best teachers in the system of professional development occurs in several ways. Firstly, through conducting master classes. Topics such as: assessment of students' achievements, organization of work in a specialized school, the use of digital resources in education, methods of preparing students for Olympiads, analysis of the results of the Unified State Exam in subjects, design, research and experimental activities of students and teachers, organization of training of gifted children, etc. are in demand.

Improvement of the quality of vocational education is possible only on the basis of activation of innovative processes, improvement of forms, methods and technologies of professional development. Quite a lot of teachers carry out activity-reflexive training using project methodology.

This orientation allows students to stimulate interest in the problem being studied, to activate cognitive and research activities aimed at improving knowledge both in design and research activities and in the field of information and communication technologies, which contributes to the formation of the necessary competencies.

An indicator of the quality of additional educational professional programs is the presence of long-term contacts with educational authorities of various levels, educational organizations. It is the issues of the quality of training specialists that are the main topic of such cooperation. Constant interaction with educational organizations allows you to predict

the development of certain educational programs and timely make the necessary adjustments to educational activities, forming a quick response from the educational organization, maintaining a steady demand for updated high-quality educational programs [5-7].

The model of advanced training based on the center for distance education (CDO) is a network of centers in which the main institution and inter-district centers are allocated (based on resource centers, methodological services of the region, basic schools, etc.).

The model of advanced training through the CDO has innovative educational and management subsystems, including technological, technical, information andeducational, human resources, methodological and regulatory support.

A feature of the model is the creation and development of information and computer technology of a rich educational environment for advanced training, ensuring the activity of the subjects of the educational process.

The necessary conditions for the development of distance learning are:

– availability of computer equipment and telecommunication facilities in schools;

– the initial level of training of teachers in the field of information technology (knowledge of the basics of computer literacy);

– the presence of information culture among teachers [7].

Models of methodologist training within the PC system (target and organizational components). When developing models of advanced training of methodologists of educational institutions, we took into account the functions of the modern system of advanced training of educational workers and the innovative experience of PC institutions.

Currently, the professional development system is being updated, including by expanding its functions and approaching the needs of teaching staff.

The approach to the needs of users is carried out through the development of new models of professional development and new forms: distance learning, internships, etc.

The professional development model has several structural blocks: targeted, substantive, procedural, diagnostic. The target block is a system of goals and objectives (based on the use of pedagogical laws, principles and theoretical provisions). The diagnostic unit is a set of techniques, methods, methods for diagnosing the level of formation of professional readiness of methodologists. The substantive and procedural blocks involve the synthesis of methods regulating the forms, organizations, methods, and means of forming readiness for professional activity.

The target model of professional development of methodologists. The objectives of professional development should ensure the professional training of methodologists to carry out methodological activities at the level of professionalism.

As criteria for assessing the levels of professional competence, we distinguish the following:

1. Objective criteria — objective characteristics of the social value of the labor product (high labor productivity, quantity and quality of the product, reliability of the product, social status of the employee, successful solution of professional tasks),

2. Subjective criteria — subjective satisfaction of the subject of labor with the profession (compliance of the profession with the inclinations, motives of the subject of labor, the desire to remain in the profession),

3. Effective criteria — compliance of the labor product with the required normative parameters,

4. Procedural criteria — compliance of professional actions of the subject of labor with socially fixed normative technologies; what methods and means of labor were used,

5. Normative criteria — an assessment of the extent to which the subject of labor has mastered the norms and rules, the standards of the profession, whether he is able to reproduce them at the skill level,

6. Individual-variable criteria — an assessment of the extent to which the subject of labor seeks to individualize his work, develops an individual style of work,

7. The criterion of the present (actual) level of professionalism is an assessment of the actual level of knowledge and skills of the subject of labor (assessed traditionally during certification),

8. Prognostic criterion — assessment of the «zone» of the nearest development of the subject of labor, his vision of his professional prospects,

9. The criterion of professional learnability is an assessment of the readiness of the labor subject to the perception of new professional experience, the degree of openness to new experience,

10. The criterion of creativity is an assessment of the degree of expression of personal creativity, readiness to enrich the profession with new technologies,

11. The criterion of social activity and competitiveness of a professional in the labor market, in society is an assessment of the social position of the labor subject, the professional locus of control, the idea of their competitive advantages and limitations,

12. The criterion of professional commitment is an assessment of the measure of professional patriotism, dedication to the profession and organization, and the personal significance of the profession,

13. Qualitative and quantitative criteria of certain aspects of professionalism — expert assessments of the quality of the product of labor and the labor process, a rating of labor results, a rating of the level of development of professionally important qualities of the subject of labor, a comparative assessment when performing tasks that model fragments of labor activity.

The presented criteria of professionalism are comparable with the key competencies of the Spencers (Table 1) and the motivated abilities of J. Ravena.

Based on the analysis of clusters of competencies of specialists in the field of education, we have built a target model of professional development, which includes: design, reflexive, communicative, research competencies [1-3].

Organizational model of professional development of methodologists. The organizational model reveals, first of all, the technological component of the professional development process. The proposed technology provides for the shift of the leading role in teaching – from the teacher to the student – to the joint activity of the student and the teacher at all its stages (planning, implementation, evaluation, correction).

Training begins with the psychological and andragogical diagnostics of students, the main tasks of which are: finding out the parameters of training specialists, forming their stable motivation to study.

Means, forms, methods of teaching are selected taking into account psychological and andragogical characteristics, life experience and cognitive styles. The selected teaching methods are undergoing significant changes due to the flexible organizational structure, the enriching content of education and the peculiarities of adult learning (Table 1).

Table. 1. Key competencies.

Competence	
Clusters	**Types**
I «Achievement and action»	1. Achievement orientation 2. Care about order, quality and accuracy 3. Initiative 4. Search for information
II «Helping and serving others»	5. Interpersonal understanding 6. Customer service orientation

IV «Managerial competencies»	10. Development of others 11. Directive 12. Teamwork and cooperation 13. Team leadership
III «Impact and exerting influence»	7. Impact and exerting influence 8. Understanding the company 9. Building relationships
V «Cognitive competencies»	14. Analytical thinking 15. Conceptual thinking 16. Technical, professional, managerial expertise
VI «Personal effectiveness»	17. Self-control 18. Self-confidence 19. Flexibility 20. Loyalty to the company
VII «Other personal characteristics and competencies»	Examples: accurate self-assessment, etc.

The selection of the content of education is carried out according to well-known criteria, among which Y. K. Babansky calls the following:

1. The criterion of a holistic reflection in the content of education of the main components of social experience, the prospects for its improvement, the tasks of comprehensive personal development.

2. The criterion for identifying the main and essential in the content of education, that is, the selection of the most necessary, universal, promising elements.

3. The criterion of compliance with the capabilities of students.

4. The criterion of compliance with the time allocated by the curriculum for the study of this content.

5. Criteria for taking into account domestic and international experience in the formation of the content of programs.

6. The criterion of compliance of the content with the existing educational, material and methodological base of the educational institution.

Following the problem of selecting the content of training, the problem of structuring this content arises. This is especially true for modular learning, in which the division of educational content into autonomous modules acts as a key moment.

Various methods of structuring educational material are known: the method of didactic matrices (V. P. Bespalko), graph theory (A.M. Sokhor), the method of enlarging didactic units (P. M. Erdniev), the method of modular construction (P. Yutsevichene), the method of allocating structural and system units of knowledge (B. I. Korotyaev).

Despite the different approaches to structuring the educational material, they are all based on the same principles. We have identified the following principles of structuring the content of training:

– the principle of systematic and logical sequence of presentation of educational material;

– the principle of integrity and practical significance of the content;

– the principle of visual presentation of educational material [4].

An important point in the development of the module is the presentation of its content in a visual, user—friendly form. The term «module» in the etymological sense is «compression, arrangement of knowledge». It is obvious that the effectiveness of mastering the module will depend not only on the completeness of the educational information, but also on how this information is compiled.

Currently, various approaches to the design of modular programs (MP) and modules can be found in the pedagogical literature. The most common interdisciplinary approach. For a professional development system where the training time is very short, a professional function or a separate operation, as well as the types of tasks to be solved or situations of professional activity, acts as a unit for structuring educational information into modules. And among the models of content representation, researchers distinguish the following:

A production model as a set of rules and regulations for solving educational tasks or implementing necessary procedures.

The frame model structures and systematizes information into special matrices and schemes based on the frame. A frame is a unit of representation of knowledge acquired in the past, the details of which, if necessary, can be changed according to the requirements of the current development situation. The frame consists of cells, each of which has its own special purpose.

The semantic network model is based on knowledge representation using graphs, flowcharts and drawings. In this case, the information is summarized, systematized in the form of reference notes, graphs, etc.

Modern science explains why mathematicians are focused on logical and production models, while physicians and biologists prefer frame and semantic ones. It is obvious that one cannot do without a semantic network model when studying these disciplines.

With modular training, it is advisable to illustrate each module under study with a flowchart representing the entire content of the training in a compressed form, and to complete the learning process with a synopsis diagram depicting the entire theoretical material of the module in a compact form.

It is important to keep in mind that the effectiveness of mastering the module depends not only on the way the teaching material is presented, but also on how correctly the teacher draws up a list of tasks, realizing that it is she who acts as the basic structural unit of the content of the subject: illustrates theory, reveals the possibilities of solving a practical situation, serves as the main means of analyzing the results of activity [2-4].

3 Conclusions

Modular approach as a tool for describing educational programs of advanced training. The didactic purpose of the modular program is to train teachers to perform certain types of educational activities. Specific training activities or subject knowledge that are necessary to perform a certain type of activity act as training elements (discrete units) in the implementation of a modular program.

A module is a logically completed unit of educational material, an important component of solving a major professional problem.

Each module of the curriculum consists of a number of submodules, which are arranged in such a way that the content of the training varies from simple to complex.

The structure of the training module is based on the principle of splitting the entire training material by types of professional tasks. Each topic can be studied at one level or another. For example, at the level of a general introduction to the problem, in-depth study and decision-making by standard methods, a special approach to solving based on one's own choice and justification of actions, etc. Depending on the nature of educational goals, the student may be limited to either the first level or master additional educational levels.

Various modules have a high degree of autonomy and have their own strategy within the broad criteria and conditions that are presented in a certain group. The adaptability of the modules makes it possible to swap them, and, if necessary, to include new ones, depending on the goals of the program implementation, certain priorities.

Modular programs allow you to:

– due to the integration of the components of academic disciplines, it is flexible to respond to the educational request and interests of students, adhere to different styles and learning rates in various professional groups;

– not so much to focus on the transfer of certain knowledge, as to form key competencies with the help of subject knowledge and reliance on professional experience;

– change modules depending on the goals of the educational program, adjust the learning process taking into account priorities; move modules, preserving and maintaining the general logic of the content.

Modular programs create conditions for the implementation of personality-oriented learning, increase competitiveness in the market of educational services [3,6].

Step-by-step mastering of the technology of modular structuring of educational material allows the teacher and the student to make individual programs taking into account their own needs, to update the content of education, increasing the effectiveness of the entire pedagogical process.

A key indicator of the quality of additional vocational education programs is the presence of long-term contacts with educational authorities, educational organizations. Constant interaction with educational organizations, built taking into account the requirements for the educational level of specialists, allows you to predict the development of educational programs and timely make the necessary adjustments to educational activities.

The analysis of the existing models of additional professional education shows that academies, institutes, universities and centers that conduct advanced training of teaching staff are in a state of search for new highly effective technologies, methods and forms of training and retraining of teaching staff.

References

1. O.A. Konopkin, Questions of psychology **2**, 128-135 (2004)
2. V.T. Kudryavtsev, V.I. Slobodchikov, L.V. Shkolyar, Izv. Russian Academy of Sciences Education **4**, 4-46 (2001)
3. Yu.I. Kunitskaya, Pedagogy **6**, 21-25 (2004)
4. A.M. Kushnir, *Living Pedagogy. Openness. Culture. The science. Education: materials of the round table "Domestic pedagogy today — a dialogue of concepts"* (M., 2004)
5. O.G. Larionova, *The integration of personality-centered and competence-based approaches in contextual learning: based on the material of teacher training in mathematics: abstract. dis. doctor of Pedagogical Sciences* (M., 2007)
6. O.E. Lebedev, School technologies **5**, 3-12 (2004)
7. O.E. Lebedev, *Goals and results of school education: Method. recommendations* (S.-Petersburg State University of Pedagogical Sciences, 2001)
8. O. Leonova, Alma Mater. **1**, 36–40 (2006)
9. E.D. Lipkina, *The concept of an effective system of continuing education* (Omsk, OmSPU, 2002)